CS 112 - Fall 2012, Lab 03

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Random Class

- http://docs.oracle.com/javase/7/docs/api/java/util/Random.html

- Create an object for **Random()**
  - Random r = new Random();

- Use method **.nextInt(n)** to generate a pseudorandom, uniformly distributed int value between 0 (inclusive) and the specified value **n** (exclusive)

Evaluation by Time

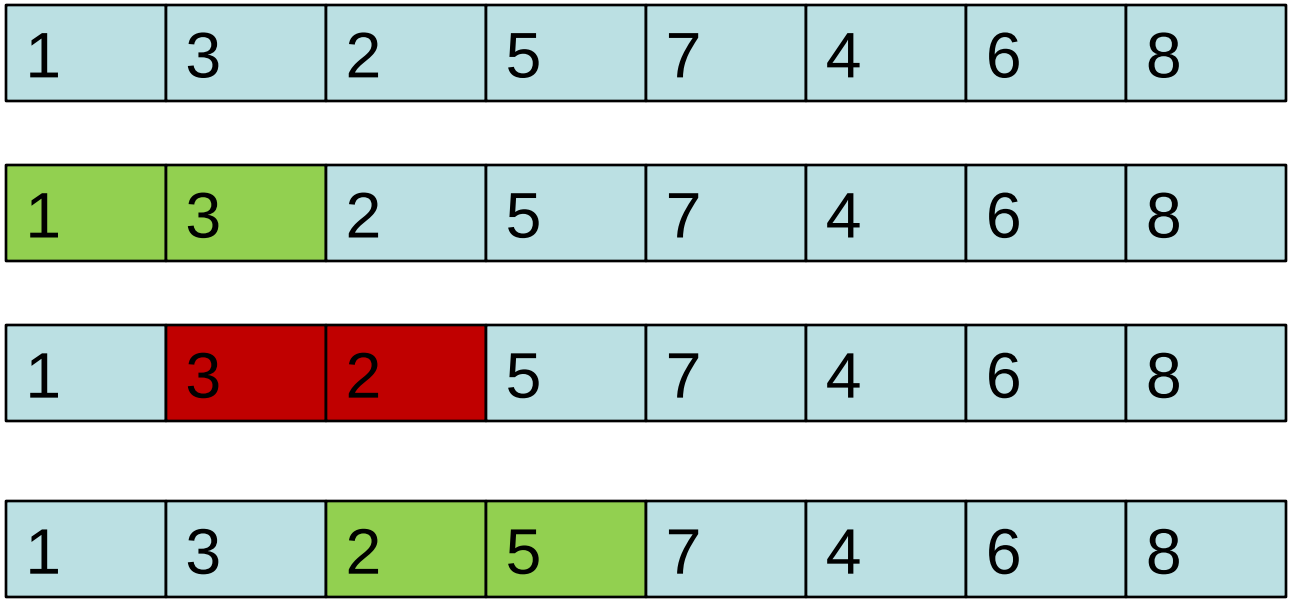
- http://docs.oracle.com/javase/7/docs/api/java/lang/System.html
- **System.nanoTime();**
- **System.currentTimeMillis();**

Practice: Inversion

- Let int A[] be an array of distinct integers. There are len = A.length distinct integers.
- If i<j and A[i]>A[j], then the pair (i, j) is called an inversion of A.
- There exists many such pairs in A. Compute how many inversions in A.

Practice: Inversion

- Intuitive method: O(n^2)



Practice: Inversion

- Maximal number of inversions ?
- Find an efficient algorithm
- When the array is partly sorted, to determine how many inversions are caused by a number, we do not need to compare every pair of numbers. For instance, in array {1,3,5,7,2,4,6,8}, consider the number of inversions caused by 2.

Practice: Inversion

- Use the process similar to merge sort